

Disclosed is a method for processing collagen-based tissues or organs to substantially decellularize said collagen-based tissues or organs prior to implantation into a recipient in need thereof. Preferably, the method significantly reduces or eliminates immunogenicity of the tissue or organ such that upon transplantation, the tissue or organ is not rejected by the recipient's immune system. The method includes removing the tissue from a donor, processing the tissue to remove substantially all of the cells of the tissue or organ, and processing of the collagen scaffold for storage. The method further includes repopulating the collagen scaffold through seeding with stem cells for implantation into recipient.

**SECRET**